

**Table 2A: Post-Remedial GW Monitoring STF Site**

Well Names & Numbers	April 2000				October 2000				October 2001				October 2002			
	PAH	TPH <sub>diesel</sub>	TPH <sub>oil</sub>	Total Lead	PAH	TPH <sub>diesel</sub>	TPH <sub>oil</sub>	Total Lead	PAH	TPH <sub>diesel</sub>	TPH <sub>oil</sub>	Total Lead	PAH	TPH <sub>diesel</sub>	TPH <sub>oil</sub>	Total Lead
	ug/L with EPA 8270	mg/L with NWTPHd	mg/L with NWTPHd	mg/L with EPA 742	ug/L with EPA 8270	mg/L with NWTPHd	mg/L with NWTPHd	mg/L with EPA 742	ug/L with EPA 8270	mg/L with NWTPHd	mg/L with NWTPHd	mg/L with EPA 742	ug/L with EPA 8270	mg/L with NWTPHd	mg/L with NWTPHd	mg/L with EPA 742
<b>AMSTED</b>																
MW-1A	non detect	<b>0.32</b>	<0.50	<.001	non detect	<.25	<.50	<b>0.002</b>	non detect	<b>0.32</b>	<.5	<.001	non detect	<.250	<.500	<b>0.00124</b>
CBS-4A	non detect	<0.25	<0.50	<.001	non detect	<.25	<.50	<.001	non detect	<.25	<.5	<.001	non detect	<.250	<.500	<.001
VMW-1	non detect	<0.25	<0.50	<b>0.005</b>	non detect	<.25	<.50	<b>0.004</b>	non detect	<.25	<.5	<b>0.022</b>	non detect	<.250	<.500	<.001
<b>STF</b>																
STM-1A	not analyzed	not analyzed	not analyzed	<b>0.005</b>	not analyzed	not analyzed	not analyzed	<b>0.011</b>	not analyzed	not analyzed	not analyzed	<.001	not analyzed	not analyzed	not analyzed	<b>well damaged</b>
STM-3A	not analyzed	not analyzed	not analyzed	<b>0.005</b>	not analyzed	not analyzed	not analyzed	<b>0.001</b>	not analyzed	not analyzed	not analyzed	<b>0.003</b>	not analyzed	not analyzed	not analyzed	<b>0.00139</b>
*STM-4A	not analyzed	not analyzed	not analyzed	<b>0.016</b>	not analyzed	not analyzed	not analyzed	<b>0.01</b>	not analyzed	not analyzed	not analyzed	<b>0.004</b>	not analyzed	not analyzed	not analyzed	<b>0.00995</b>
* STM-100(a)	not analyzed	not analyzed	not analyzed	<b>0.018</b>	not analyzed	not analyzed	not analyzed	<b>0.009</b>	not analyzed	not analyzed	not analyzed	<b>0.003</b>	not analyzed	not analyzed	not analyzed	<b>0.00826</b>
CBS-7A	not analyzed	not analyzed	not analyzed	<.001	not analyzed	not analyzed	not analyzed	<b>0.005</b>	not analyzed	not analyzed	not analyzed	<.001	not analyzed	not analyzed	not analyzed	<b>0.00117</b>
CBS-9A	not analyzed	not analyzed	not analyzed	<.001	not analyzed	not analyzed	not analyzed	<.001	Closed after 2000				Closed after 2000			
CBS-10A	not analyzed	not analyzed	not analyzed	<b>0.008</b>	not analyzed	not analyzed	not analyzed	<.001	not analyzed	not analyzed	not analyzed	<.001	not analyzed	not analyzed	not analyzed	<b>0.00537</b>
VMW-2	not analyzed	not analyzed	not analyzed	<b>0.006</b>	not analyzed	not analyzed	not analyzed	<b>0.009</b>	not analyzed	not analyzed	not analyzed	<b>0.004</b>	not analyzed	not analyzed	not analyzed	<b>0.0182</b>
VMW-3	not analyzed	not analyzed	not analyzed	<b>0.002</b>	not analyzed	not analyzed	not analyzed	<b>0.018</b>	not analyzed	not analyzed	not analyzed	<b>0.002</b>	not analyzed	not analyzed	not analyzed	<b>0.00292</b>
MNW-17A1	not analyzed	not analyzed	not analyzed	<.001	not analyzed	not analyzed	not analyzed	<.001	not analyzed	not analyzed	not analyzed	0.001	not analyzed	not analyzed	not analyzed	<.001
Action Level		not available	not available	<b>0.015</b>		not available	not available	<b>0.015</b>		not available	not available	<b>0.015</b>		not available	not available	<b>0.015</b>

**NOTES**

**bold type** indicates analyte found at the given concentration above detection level

**colored** indicates analyte found above the specified action level

"<##.##" indicates analyte not found below the given detection level

\* STM-100(a) is a duplicate for STM-4A

**Table 2B: Post-Remedial Groundwater Monitoring for Natural Attenuation (1999-2002), Pioneer Builders Supply, South Tacoma Fields Site**

	NMW-1A										NMW-8A										NMW-9A									
	May-99	Aug-99	Nov-99	Jan-00	1/00 dup	Oct-01	10/01 dup	Oct-02	10/02 dup	May-99	Aug-99	Nov-99	Jan-00	Oct-01	Oct-02	May-99	Aug-99	Nov-99	Jan-00	Oct-01	Oct-02									
VOCs (ug/L)					(NMW-100)		(NMW-100)		(NMW-100)																					
Acetone	<b>11</b>	<13				<5.0	<5.0	<25.0	<25.0	<b>13</b>	<5.0			<5.0	<25.0	<1.0	<5.0			<5.0	<25.0									
1,2-Dichloroethane			<1.0									<1.0							<1.0											
2-Butanone		<5.0				<5.0	<5.0	<10.0	<10.0	not analyzed	<5.0			<5.0	<10.0	not analyzed	<5.0			<5.0	<10.0									
Benzene	<b>32</b>	<b>11</b>	<b>21</b>	<b>12</b>	<b>14</b>	<b>3.1</b>	<b>3.2</b>	<b>7.81</b>	<b>7.26</b>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.00	<1.0	<1.0	<b>1.0</b>	<1.0	<1.00										
Chloroform	<1.0									1.3								<1.0												
Toluene	<b>8.1</b>	<b>9.0</b>	<b>120</b>	<b>1.6</b>	<b>1.7</b>	<b>16</b>	<b>16</b>	<b>38.3</b>	<b>24.5</b>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.00	<1.0	<1.0	<b>1.9</b>	<1.0	<1.00										
Ethylbenzene	<b>20</b>	<b>20</b>	<b>280</b>	<b>1.0</b>	<1.0	<b>78</b>	<b>80</b>	<b>148</b>	<b>116</b>	<1.0	<1.0	<1.0	<1.0	<b>1.2</b>	<1.00	<1.0	<1.0	<b>3.8</b>	<1.0	<1.00										
Total Xylenes	<b>5.2</b>	<b>31.7</b>	<b>552</b>	<b>3.3</b>	<b>3.0</b>	<b>113</b>	<b>113</b>	<b>272.3</b>	<b>207.9</b>	<2.0	<2.0	<2.0	<2.0	<b>2.0</b>	<2.00	<2.0	<2.0	<b>8.3</b>	<2.0	<2.00										
n-Butylbenzene			<b>13</b>					<b>9.16</b>	<b>6.48</b>			<1.0			<1.00			<1.0												
sec-Butylbenzene								<b>7.53</b>	<b>6.69</b>						<1.00					<1.00										
p-Isopropyltoluene								<b>24.8</b>	<b>18.0</b>						<1.00					<1.00										
4-Isopropyltoluene			<b>12</b>									<1.0						<1.0												
1,2-Dichlorobenzene	<b>1.2</b>	<b>1.7</b>				<1.0	<1.0	<1.00	<1.00	<1.0	<1.0			<1.0	<1.00	<1.0	<1.0		<1.0	<1.00										
1,3-Dichlorobenzene			<b>5.0</b>							<1.00	<b>13.8</b>			<1.0		<1.00			<1.0		<1.00									
1,4-Dichlorobenzene	<b>2.0</b>	<b>1.6</b>	<b>8.2</b>			<b>1.1</b>	<b>1.1</b>	<b>4.15</b>	<b>17.4</b>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.00	<1.0	<1.0	<1.0	<1.0	<1.00										
sec-Butylbenzene			<b>12</b>									<1.0			<1.0				<b>2.9</b>											
1,3,5-Trimethylbenzene	<1.0	<b>5.7</b>	<b>130</b>			<b>22</b>	<b>25</b>	<b>70.7</b>	<b>50.8</b>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.00	<1.0	<1.0	<b>1.7</b>		<1.00										
1,2,4-Trimethylbenzene	<b>1.4</b>	<b>8.8</b>	<b>180</b>	<b>1.7</b>	<b>1.8</b>	<b>85</b>	<b>95</b>	<b>180</b>	<b>118</b>	<1.0	<1.0	<1.0	<1.0	<b>1.1</b>	<1.00	<1.0	<1.0	<b>2.9</b>	<1.0	<1.00										
tert-Butylbenzene			<b>1.7</b>									<1.0			<1.0				<1.0											
Isopropylbenzene	<b>11</b>	<b>4.9</b>	<b>54</b>	<b>2.0</b>	<b>2.5</b>	<b>16</b>	<b>18</b>	<b>37.9</b>	<b>32.6</b>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.00	<1.0	<1.0	<b>4.6</b>	<1.0	<1.00										
n-Propylbenzene	<b>5.8</b>	<b>3.1</b>	<b>48</b>			<b>18</b>	<b>20</b>	<b>45.2</b>	<b>34.7</b>	<1.0	<1.0	<1.0	<1.0	<1.0	<1.00	<1.0	<1.0	<1.0	<1.0	<1.00										
1,2,4-Trichlorobenzene	<b>98</b>	<b>110</b>	<b>7.4</b>	<b>13</b>	<b>13</b>	<5.0	<5.0	<1.00	<1.00	<5.0	<5.0	<5.0	<5.0	<5.0	<1.00	<5.0	<5.0	<5.0	<5.0	<1.00										
Naphthalene		<b>7.6</b>	<b>84</b>			<b>14</b>	<b>15</b>	<b>88.3</b>	<b>66.6</b>			<5.0	<5.0	<5.0	<5.0	<1.00	<5.0	<5.0	<5.0	<5.0	<1.00									
1,2,3-Trichlorobenzene	<b>110</b>	<b>120</b>	<b>12</b>	<b>16</b>	<b>16</b>	<5.0	<5.0	<b>3.14</b>	<1.00	<5.0	<5.0	<5.0	<5.0	<5.0	<1.00	<5.0	<5.0	<5.0	<5.0	<1.00										
Methane (ug/L)	<0.50									<0.50						<0.50														
<b>TOTAL PETROLEUM HYDROCARBONS (mg/L)</b>																														
Diesel range	<b>0.68</b>	<b>.44</b>	<b>0.38</b>	<b>0.38</b>	<b>0.31</b>	<0.25	<0.25	<b>0.859</b>	<b>0.910</b>	<0.25	<0.25	<0.25	<0.25	<0.25	<0.250	<0.25	<b>0.26</b>	<0.25	<0.25	<0.25										
Gasoline range	<b>1</b>	<b>0.97</b>	<b>7.1</b>	<b>0.46</b>	<b>0.44</b>	<b>3.4</b>	<b>3.4</b>	<b>5.660</b>	<b>5.180</b>	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.050	<0.25	<0.25	<b>0.40</b>	<0.25	<0.25	<0.25	<0.050							
Oil range		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.500	<0.500	<0.50	<0.50	<0.50	<0.50	<0.50	<0.500	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50								

**Bold values** are detected concentrations.

**Table 2B: Post-R**

	NMW-10A										NMW-11A					
	May-99	May-99 dup	Aug-99	Aug-99 dup	Nov-99	Nov-99 dup	Jan-00	Oct-01	Oct-02	May-99	Aug-99	Nov-99	Jan-00	Oct-01	Oct-02	
VOCs (ug/L)		NMW-100		NMW-0A		NMW-100										
Acetone	<1.0	<1.0	<5.0	<b>11</b>				<5.0	<25.0	<1.0	<5.0			<5.0	<25.0	
1,2-Dichloroethane					<1.0	<b>1.2</b>						<1.0				
2-Butanone			<9.6	<b>5.2</b>				<5.0	<10.0		<5.0			<5.0	<10.0	
Benzene	<1.0	<1.0	<b>7.6</b>	<b>7.1</b>	<1.0	<1.0	<1.0	1.0	<1.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.00	
Chloroform	<1.0	<1.0								<1.0						
Toluene	<1.0	<1.0	<b>20</b>	<b>17</b>	<b>1.1</b>	<b>1.0</b>	<1.0	<b>7.9</b>	<1.00	<1.0	<1.0	<b>1.9</b>	<1.0	<1.0	<1.00	
Ethylbenzene	<b>3.1</b>	<b>3</b>	<b>52</b>	<b>46</b>	<b>3.3</b>	<b>3.5</b>	<1.0	<b>5.4</b>	<1.00	<1.0	<1.0	<b>5.5</b>	<1.0	<1.0	<1.00	
Total Xylenes	<b>8.1</b>	<b>8.2</b>	<b>63.6</b>	<b>53.7</b>	<b>5.7</b>	<b>5.9</b>	<2.0	<b>8.6</b>	<2.00	<2.0	<2.0	<b>12.4</b>	<2.0	<2.0	<2.00	
n-Butylbenzene					<1.0	<1.0			<1.00			<1.0			<1.00	
sec-Butylbenzene									<1.00						<1.00	
p-Isopropyltoluene									<1.00						<1.00	
4-Isopropyltoluene					<1.0	<1.0						<1.0				
1,2-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0				<1.0	<1.00	<1.0	<1.0			<1.0	<1.00	
1,3-Dichlorobenzene					<1.0	<1.0			<1.00			<1.0			<1.00	
1,4-Dichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0			<1.00	<1.0	<1.0	<1.0		<1.0	<1.00	
sec-Butylbenzene					<1.0	<1.0						<1.0				
1,3,5-Trimethylbenzene	<1.0	<b>4.2</b>	<1.0	<1.0	<b>1.0</b>	<b>1.1</b>		<1.0	<1.00	<1.0	<1.0	<b>1.9</b>		<1.0	<1.00	
1,2,4-Trimethylbenzene	<b>1.5</b>	<b>1.7</b>	<b>5.1</b>	<b>3.8</b>	<b>1.7</b>	<b>1.9</b>	<1.0	<b>2.7</b>	<1.00	<1.0	<1.0	<b>2.4</b>	<1.0	<1.0	<1.00	
tert-Butylbenzene					<1.0	<1.0						<1.0				
Isopropylbenzene	<1.0	<1.0	<b>3.2</b>	<b>2.6</b>	<1.0	<1.0	<1.0	<1.0	<1.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.00	
n-Propylbenzene	<b>1.3</b>	<b>1.2</b>	<b>2.6</b>	<b>2.1</b>	<1.0	<1.0		<1.0	<1.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.00	
1,2,4-Trichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.00	<5.0	<5.0	<5.0	<5.0	<5.0	<1.00	
Naphthalene			<b>25</b>	<b>24</b>	<5.0	<5.0		<5.0	<1.00		<5.0	<5.0		<5.0	<1.00	
1,2,3-Trichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.00	<5.0	<5.0	<5.0	<5.0	<5.0	<1.00	
Methane (ug/L)	<0.50	<0.50							<0.50							
TOTAL PETROLEUM HYDROCARBONS (mg/L)																
Diesel range	<b>0.44</b>		<b>1.6</b>		<0.25	<0.25	<b>0.25</b>	<0.25	<b>0.536</b>	<0.25	<0.25	<0.25	<0.25	<0.25	<0.250	
Gasoline range	<0.25		<b>0.68</b>		<0.25	<0.25	<0.25	<0.25	<b>0.984</b>	<0.25	<0.25	<0.25	<0.25	<0.25	<0.050	
Oil range			<0.5		<0.50	<0.50	<0.50	<0.50	<0.500		<0.50	<0.50	<0.50	<0.25	<0.500	

Bold values are detected

**TABLE 3: Comparison EPA Cleanup Levels to Revised MTCA Groundwater Cleanup Levels (2001): Pioneer Builders Supply Groundwater (MNA) Portion of the South Tacoma Field Site**

	At The Time of EPA 1994 ROD, 1999 ESD		Notes	2001 MTCA Revisions		Notes
	MCL	Cleanup Levels		MCLs	Cleanup Levels	
	units	ug/L		ug/L	ug/L	
Acetone	--	800	Not specified for cleanup at Pioneer Builders Supply.	--	800	Method B formula calculation for non-carcinogenic effects
1,2,4-Trichlorobenzene	70	80	Not specified for cleanup at Pioneer Builders Supply.	70	80	MCL unchanged. Calculated concentration per Revised Method B is 80 ug/L for non-carcinogenic effects
1,2-Dichlorobenzene	600	720	Not specified for cleanup at Pioneer Builders Supply.	600	720	MCL unchanged. Calculated concentration per Revised Method B is 720 ug/L for non-carcinogenic effects
1,4-Dichlorobenzene	75	1.82	Not specified for cleanup at Pioneer Builders Supply.	75	1.82	MCL unchanged. Calculated concentration per Revised Method B is 1.82 ug/L for non-carcinogenic effects
1,2-Dichloroethane	5		Not specified for cleanup at Pioneer Builders Supply.	5	0.481	MCL unchanged. Concentration per Revised Method A is 5 ug/L, and per Revised Method B calculation is 0.481 ug/L for carcinogenic effects
1,1,2-Trichloroethane	5	5	Cleanup level based on federal drinking water standard. Must achieve MTCA cumulative risk not exceeding 1 per 100,000 or a Hazard Index not greater than 1. Otherwise, drinking water use will not be allowed.	5	5	MCL is unchanged. Calculated concentration per Revised Method B calculation is 0.768 ug/L for carcinogenic effects, and 320 ug/L for non-carcinogenic effects. Revised MTCA allows use of MCL for this contaminant.
Toluene	1000	1000	Based on MTCA Method B calculated concentration. Must achieve MTCA cumulative risk not exceeding 1 per 100,000 or a Hazard Index not greater than 1. Otherwise, drinking water use will not be allowed.	1000	1,600	MCL unchanged. Calculated concentration per Revised Method B is 1,600 ug/l for non-carcinogenic effects.
Benzene	5	5	Must achieve MTCA cumulative risk not exceeding 1 per 100,000 or a Hazard Index not greater than 1. Otherwise, drinking water use will not be allowed.	5	5	MCL unchanged. Concentration per Revised Method A is 5 ug/L, and per Revised Method B calculation is 0.795 ug/l for carcinogenic effects, 24 ug/L for non-carcinogenic effects. Revised MTCA allows use of MCL for this contaminant.
Ethylbenzene	700	700	Must achieve MTCA cumulative risk not exceeding 1 per 100,000 or a Hazard Index not greater than 1. Otherwise, drinking water use will not be allowed.	700	700	MCL unchanged. Concentration per Revised Method A is 700 ug/L, and per Revised Method B calculation is 800 ug/L for non-carcinogenic effects
Naphthalene	none	32	Based on MTCA Method B calculated concentration.	none	20	No MCL. ROD concentration based on MTCA Method B calculation. 2001 revised MTCA Method A is 20 ug/L, and for Method B calculation is 160 ug/L for non-carcinogenic effects.
Xylene (total)	10000	10000	Enforcement for this concentration will be at discretion of Ecology.	10000	1,000	MCL unchanged. Concentration per Revised Method A is 1,000 ug/L, and per Revised Method B calculation is 16,000 ug/L for non-carcinogenic effects
Total Petroleum Hydrocarbons	none	1000 (for State)	Based on MTCA Method A. Enforcement for this concentration will be at discretion of Ecology.	none	see note	Revised MTCA calculations for Method B are 500 ug/L (non-carcinogenic) for diesel and heavy oil by NWTPH-Dx analyses. For gas range organics, revised Method B concentration is 800 ug/L (with benzene), 1000 ug/L (w/out benzene).

Cleanup Levels and Risk Calculations under the MTCA Cleanup Regulation, CLARC, Version 3.1. Table for Potable Ground Water -- ARARs and Standard Method B and C Formula Values. Updated August 2001. Washington State Department of Ecology, Pub. No. 95-145. November 2001.